IN THE UNITED STATES DISTRICT COURT
DISTRICT OF MASSACHUSETTS

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ARISTA. RECORDS LLC, et al.,	) Civil Action No. 1:04-cv-12434-NG
	) (Consolidated Docket No.)
Plaintiffs,	)
	)
	) Civil Action No. 1:07-cv-10834- NG
-v.-	) (Original Docket No.)
	)
DOES 1-21,	)
	)
Defendants.	)
	)

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DECLARATION IN SUPPORT OF DEFENDANTS' MOTION TO QUASH SUBPOENA

I, Azer Bestavros, under the penalty of perjury, hereby declare and say that:

1. I am Professor and Chairman of the Department of Computer Science of Boston University.

2. I am Chair of the **Institute of Electrical and Electronics Engineers** (IEEE) Computer Society Technical Committee (TC) on the Internet, and have received excellence awards from both the ACM and the IEEE for my service to the CS community.

3. I am the author of more than 100 journal and conference papers, many of which have been cited widely.

4. My research has been funded by National Science Foundation (NSF), Army Research Office (ARO), GTE, Microsoft, Sprint, and Fortress Tech.

5. My networking research aims at improving the scalability of Web and Internet services as reflected in my content distribution model, adopted years later by CDNs, traffic self similarity and reference locality characterization, caching and streaming media delivery protocols, end-to-end inference of network caricatures, and identifying and countering adversarial exploits of system and network dynamics.

6. My real-time systems research revolves around improving service predictability and Quality of Service (QoS) as exemplified in generalization of classical rate-monotonic analysis to accommodate uncertainties in resource availability/usage, use of redundancy-injecting codes for timely access to periodic broadcasts, and virtualization services for embedded sensor networks.

7. My curricular offerings include my CS-350 course, which I developed in 1998 as a gateway to all advanced systems courses at Boston University. Through a rigorous treatment of the invariant concepts underlying computing systems design, CS-350 familiarizes students with canonical problems that reoccur in software systems, and provides them with a set of classical algorithms and basic performance evaluation techniques for tackling such problems.

8. My résumé is attached as Exhibit A to this declaration.

9. I have been asked by defendants in the above-captioned law suit for my opinion on the truthfulness of certain statements made by Carlos Lineres in his Declaration "In Support Of Ex Parte Application For Leave To Take Immediate Discovery" ("Lineres Declaration"), specifically paragraph 15 which said "The RIAA also listens to the downloaded music files from these users in order to confirm that they are, indeed, illegal copies of sound recordings whose copyrights are owned RIAA members" and paragraph 18 which said "The RIAA downloaded and listened to a representative sample of the music files being offered for download by each Defendant and was able to confirm that the files each Defendant was offering for distribution were illegal copies of sound recordings whose copyrights are owned by RIAA members."

10. I believe I am qualified to render an opinion as to the truthfulness of the Lineres Declaration.

11. In my opinion it is not possible to distinguish between a music file obtained from a licensed,

legal source (e.g., original CD) and the same music file obtained illegally (e.g., through file

sharing, referred to in the Lineres Declaration as "illegal copies,") by downloading such files

from a remote user's computer over a network and only listening to the downloaded files.

I declare under the perjury laws of the United States of America that the foregoing is true and

correct.

Executed on July _12_, 2007 in Boston, Mass.

Azer Bestavros

AZER BESTAVROS

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EDUCATION

Ph.D. in Computer Science from Harvard University, Cambridge, Massachusetts, USA.	June 1992
S.M. in Computer Science from Harvard University, Cambridge, Massachusetts, USA.	June 1988
M.Sc. in Computer Engineering and Digital Control from Alexandria University, Egypt.	June 1987
B.Sc. *summa cum laude* in Computer Engineering from Alexandria University, Egypt.	June 1984

ACADEMIC EXPERIENCE

Chairman, Computer Science Department, Boston University, Boston, MA.	8/00 – present
Professor, Computer Science Department, Boston University, Boston, MA.	9/03 – present
Associate Professor, Computer Science Department, Boston University, Boston, MA.	9/98 – 8/2003
Assistant Professor, Computer Science Department, Boston University, Boston, MA.	9/91 – 8/1998
Research Fellow, Computer Science Department, Harvard University, Cambridge, MA.	9/87 – 8/1991
Instructor, Computer Science Department, Alexandria University, Egypt.	9/84 – 6/1987
Lecturer, Arab Academy for Science and Technology, Alexandria, Egypt.	9/84 – 8/1985

PROFESSIONAL EXPERIENCE

Co-Founder and Principal Technical Officer, CNT Inc. (Acquired by Network Appliance Inc.)	4/98 – 9/1999
Senior Technology Consultant, Bowne Internet Solutions, Cambridge, MA.	6/98 – 1/2000
Member of Technical Staff, AT&T Bell Laboratories, Holmdel, NJ.	6/89 – 9/1989
Senior Software Engineer, Awad & Partners Architectural Firm, Alexandria, Egypt.	6/85 – 1/1987
System Programmer, ArabSoft Inc., Alexandria, Egypt.	6/84 – 6/1985

CONSULTING AND ADVISORY EXPERIENCE

Consultant and Expert Witness in US Federal Courts on Patent Litigations, various law firms.	4/01 – present
Member of Technical Advisory Board, BU Technology Development Fund, Boston, MA.	9/00 – 8/2005
Member of Technical Advisory Board, Quarry Technologies, Cambridge, MA.	3/00 – 3/2002
Member of Technical Advisory Board, Pivia Inc., Cupertino, CA.	9/00 – 3/2002
Senior Scientific Adviser, Allaire Corporation, Cambridge, MA. (Acquired by Adobe Inc.)	1/00 – 4/2001
Consultant, Adero Inc., Charlestown, MA.	4/00 – 1/2001
Consultant, WebManage Technologies Inc. and Network Appliance Inc., Chelmsford, MA.	6/99 – 8/2000

.   ⑩ Consultant, World Health Organization, East Mediterranean Regional Office, Alexandria, Egypt. 6/89 – 9/1989
.   ⑩ Consultant, US Aid Program and Chemonics International, Cairo Regional Office, Washington D.C. 1/87 – 9/1987

HONORS

.   ⑩ Elected as Chair of the IEEE Technical Committee on the Internet 1/2007
.   ⑩ Elevated to Senior Member of the IEEE Computer Society 12/2006
.   ⑩ Selected as Distinguished Speaker of the IEEE Computer Society DVP program 4/04 – present
.   ⑩ Listed among the 500 most-cited authors of computer science papers on CiteSeer 1/99 – present
.   ⑩ Ranked as author of the largest and most cited body of core papers on Web related research on WebBib 8/1999
.   ⑩ IEEE Computer Society Distinguished Service Award 12/1999
.   ⑩ ACM Distinguished Service Award 10/1998
.   ⑩ Compaq Award for R&D in CS for work on characterizing Web reference locality 11/1997
.   ⑩ Listed in the International Who's Who of Information Technology 9/1996
.   ⑩ Finalist for the Gitner & Neu Awards for Excellence in Teaching at Boston University 10/1995

- ❿ Senior Common Room Member, Leverett House, Harvard University 9/93 – present
- ❿ Harvard University GSAS Class Marshal for the 1992 Commencement 6/1992
- ❿ Harvard University GSAS/DEAS Graduate Fellowship 9/87 – 9/1991
- ❿ Alexandria University Graduate Fellowship for Academic Excellence 9/79 – 6/1984
- ❿ Sadat Presidential Award for ranking third over 27,357 students in Egypt's nationwide diploma exam 8/1979

PROFESSIONAL SERVICE

Chair of the IEEE TC on the Internet; Member of the executive committee of the IEEE TC on Real-Time Systems and Editor-in-chief of its Newsletter; Associate Editor of Embedded Systems Journal; Reviewer for dozens of IEEE/ACM journals and NSF proposals; Panelist and program committee member for dozens of conferences (e.g. Infocom, Sigmetrics, RTSS, RTAS, Sigmod, Globecom, etc.), workshops, and for the NSF; PC Chair for WCW'01, IEEE RTAS'98, and RTDB'97; Workshop Chair for CRA Snowbird'2000; General Chair for HotWeb'06, IEEE ICNP'05, ASWN'04, WCW'01, IEEE RTAS'99, and ACM Sigplan LCTES'98. Chair or member of many departmental and college committees at BU.

SYNERGISTIC ACTIVITIES

The complete list of synergistic activities includes dozens of contributions to teaching, training, outreach, technology transfer, and service. The following are six specific examples of recent activities along these lines.

- ❿ UNDERGRADUATE CS EDUCATION: Developed and offered (since 1998) a core undergraduate course on the fundamentals of computing systems. This nationally unique course (http://www.cs.bu.edu/~best/crs/cs350) offers a rigorous treatment of the *invariant* concepts, algorithms, and performance evaluation methods underlying the design and implementation of computing systems, whether such systems are networks, databases, operating systems, web servers, architectures, etc.
- ❿ INTERDISCIPLINARY EDUCATION: Participated in a national effort at BU to develop an undergraduate curriculum for parallel computing (sponsored by NSF). Currently leading an effort at BU to develop an interdisciplinary graduate program (involving 7 departments from 3 schools) that focuses on "Sensor and Device Networks".
- ❿ SERVICE TO THE CS COMMUNITY: Organized a CRA Snowbird'2000 workshop on successful models for university-led startups, and a CRA Snowbird'2006 panel on the state of CS publications. Participated in three of GENI's formative workshops on security and real-time dimensions and in two of CPS' formative workshops on software certification.
- ❿ SERVICE TO THE NETWORKING COMMUNITY: Organized a number of top-tier conferences. Recent examples include WCW'01, ASWN'04, ICNP'05, and HotWeb'06. In August 1999, organized a one-day NSF workshop on Internet Measurement, Instrumentation, and Characterization, which was the precursor to ACM's IMC Conference.
- ❿ FACULTY ADVISER OF STUDENT GROUPS: Acted as the faculty adviser of the BU Student Chapter of the ACM, the BU Video Game Creators Consortium, and the BU Microsoft Student User Group. Activities included the organization and coordination of various technical talks, social events, technical competitions, and career-planning workshops.
- ❿ TECHNOLOGY TRANSFER: Founded an Industrial Affiliation Program to promote cross-pollination between academia and industry. Members include major labs (e.g. IBM, MS, Sun, Sprint, Cisco, VMware). Also, founding member of the Sensor Networks Consortium at BU. Pursued seven patent applications; five have issued and are licensed to industry, and one (US 6,370,584) was the basis of a startup now part of Network Appliance Inc.

TECHNICAL PUBLICATIONS

The complete list of publications includes four edited books, dozens of book chapters, and over one hundred technical papers in refereed journals and conference proceedings. Since 1999, WebBib has consistently ranked this work as one of the top three bodies of web-related research by a single author. As of August 2006, with over 3,000 citations, CiteSeer ranks this record in the top 5% of its list of 10,000 most-cited authors in all of Computer Science at all times.

- ❿ Mistreatment in Distributed Caching Groups. *In Proc. of IEEE Infocom, 2006* (with Laoutaris,

Smaragdakis, and Stavrakakis).
.   ❿   Friendly Virtual Machines. *In Proc. of ACM/USENIX Virtual Execution Environments, 2005* (with Zhang, Guirguis, Matta and West).
.   ❿   Exogenous-Loss Aware Traffic Management in Overlay Networks. *Computer Networking Journal, 2005* (with Guirguis and Matta).
.   ❿   Inference of Metric-Induced Network Topologies. *IEEE Trans. on Parallel and Distributed Systems, 2005* (with Harfoush and Byers).
.   ❿   Safe Compositional Specification of Networking Systems. *ACM SIGCOMM CCR, 2004* (with Bradley, Kfoury, and Matta).
.   ❿   A Spectrum of TCP-friendly Congestion Control Algorithms. *IEEE/ACM Transactions on Networking, 2003* (with Jin, Guo and Matta).
.   ❿   Network-Aware Partial Caching For Internet Streaming Media. *ACM Multimedia Systems Journal, 2003* (with Jin, and Iyengar).
.   ❿   Statistical Rate Monotonic Scheduling. *Proceedings of IEEE RTSS, 1998.* Linux Implementation in *IEEE RTSS, 1999* (with Atlas).
.   ❿   World Wide Web Traffic Reduction and Load Balancing Through Server-Based Caching, *IEEE Concurrency Journal, 1997.*
.   ❿   Self-Similarity in WWW Traffic: Evidence and Possible Causes. *IEEE/ACM Transactions on Networking, 1997* (with Crovella).

INVITED TALKS AND COLLOQUIA

The complete list of invited lectures exceed 70, with dozens of colloquia in major academic departments (e.g., Harvard, U Cambridge, MIT, Purdue, U Penn, U Mass Amherst) and research labs (e.g., Microsoft, AT&T, CRL, ICSI), many invited or plenary talks in technical conferences and industrial symposia. The following are few recent representative talks.

.   ❿   Friendly Virtual Machines. *Microsoft Research, Redmond, 2005 (Host: Venkat Padmanabham).*
.   ❿   Exploiting System Dynamics for Internet RoQ Attacks. *CS Department, U Cambridge, England, 2004 (Host: John Crowcroft).*
.   ❿   Practical and Efficient Construction of Network Caricatures. *ICIR/ICSI at UC Berkeley, 2003 (Hosts: Dick Karp and Sally Floyd).*
.   ❿   Scalable Real-Time Streaming in Ad-Hoc Overlay Networks. *IEEE ICDCS Workshop on RT Data Distribution, 2002 (Plenary Speech).*
.   ❿   Connection Scheduling Strategies for Scalable Web Servers. *Akamai Technologies, 2000 (Host: Charles Leiserson).*

STUDENTS AND COLLABORATORS

Academic advisor for 16 Ph.D. students (5 female), 48 Masters students (13 female, 2 minority), and over 175 undergraduate students since 1991. Former Doctoral and Masters students have secured positions at prestigious academic institutions and industrial laboratories, including: CS at NCSU, CS at CWRU, CS at Texas State, Microsoft, AT&T Research, Bellcore, IBM, BBN, EMC Corp, HP, Google, The Open Group, and GTE Laboratories. Collaborators over the last five years include

V. Almeida, A. Atlas, P. Barford, A. Bradley, J. Byers, M. Crovella, B. Frangioso, M. Guirguis, K. Harfoush, A. Heddaya,

S. Jin, W. Ke, A. Kfoury, G. Kim, G. Kollios, N. Laoutaris, F. Li, J. Liu, D. Martin, I. Matta, W. Meira, M. Ocean, A. de Oliveira, S. Rost, G. Smaragdakis, I. Stavrakakis, M. Taqqu, E. Veloso, R. West, V. Wolfe, Y. Zhang.

EXTRACURRICULAR ACTIVITIES

Father! Avid Gardner. Founder and maintainer of the Web Coptic Network Archives. Mentor of high-school church youth.